Targets and Techniques of Vocabulary Intervention For Children With Language Impairment

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Abstract

Early identification and intervention is key to increasing the language skills of young children with disabilities. Speech-language pathologists (SLPs) address the language needs of children with language impairment (LI) who receive school-based therapy. This research was conducted to learn about the focus on vocabulary in school-based therapy sessions of children with LI. Specifically, this study examined the amount of time SLPs address vocabulary in therapy sessions and different techniques they use to help those children acquire vocabulary. An additional focus was determining whether children's vocabulary skills were associated with the amount of time spent on vocabulary skills and the techniques used to teach that vocabulary during therapy. The therapy sessions of nine children with LI were coded using the Language Intervention Observation Scale (LIOS) and data related to vocabulary was extracted from the coded videos. Results showed that about 25% of therapy time is spent on vocabulary and a variety of techniques are used. Results also showed that there is no correlation between the time spent on vocabulary or the techniques used and children's vocabulary scores. Future research on how specific techniques improve the vocabulary skills of children with LI is needed.

Introduction

Over the last two decades, considerable research has shown that early identification and intervention is key to increasing the language skills of young children with disabilities, including those with language impairment (LI). Improving the language skills of children with LI can have positive impacts on psychiatric, academic, and psychosocial outcomes (Beitchman et al., 2008). There are many different developmental impairments and diagnoses that can affect children's language skills. A primary impairment of language (LI, as the term is used in this study) occurs in children when there is an unexpected difficulty in acquiring language that cannot be explained by a mental or physical handicap, hearing loss, emotional disorder or environmental deprivation. LI is one of the most prevalent developmental disorders in children five to seven years old. It is estimated that 7.4% of kindergarten and first grade students experience LI (Tomblin et al., 1997). Because of the prevalence of LI, it has a vast affect not only on the children who suffer from the disorder, but the community at large. Because LI affects the social, behavioral, and educational needs of the child, much research is being done to investigate how to assess and respond to those needs.

For children who have been diagnosed with LI, it is particularly crucial to address their language needs at an early age. Clinical identification of children who experience LI remains low in kindergarteners (Tomblin et al., 1997). Diagnoses of children at an early age will aid in preventing lifelong difficulties. It has been shown that children whose LI has been resolved by 5.5 years make progress at an age-appropriate level and have no lasting impairments in language or literacy measures (Bishop & Adams, 1990). However, Bishop and Adams (1990) also found that children who had language difficulties at 5.5 years reported having poor reading skills at 8.5 years. Even in the children with LI who had proficient reading accuracy, they still presented

with poor reading comprehension and verbal deficits (Bishop & Adam, 1990). These findings show that LI can have a lasting effect into adulthood. Both men and women who suffer from LI as a child are more likely to drop out of high school (Beitchman et al., 2008). In a study conducted with adults who were diagnosed with LI as children, those adults still presented with language patterns and behavior that differentiated them from adults with typical language development (Tomblin et al., 1992). Language intervention aims to improve the performance of children beginning at a young age so they can catch up to their peers and close the gap between lower- and higher-achieving children.

Speech-language intervention (i.e., therapy) is used in many schools to address the needs of children with LI, which is provided as part of the Individual Education Plan (IEP) that stipulates service delivery for children with disabilities. Therapy sessions can focus on many goals important to children with LI, including speech production, word reading, listening comprehension, word choice development, and overall communication. However, a focus on vocabulary is particularly important, as increasing the vocabulary skills of children with LI improves their communication in general as well as their overall reading achievement. Vocabulary is a therapy goal that tends to receive a great deal of attention in treatment manuals available for organizing therapy sessions for children with LI. While vocabulary is of an utmost importance to address in children with LI, it is only one aspect of their language impairment.

Research studies have consistently shown that the average receptive vocabulary skills of children with LI are significantly lower than those of their peers (Beitchman et al., 2008). Vocabulary is also acquired at a much later age in children with LI than typically developing peers. Once children with LI start to develop their vocabulary, they go through the same process as normal children just at a delayed rate (Hick et. Al 2002). Children with LI have trouble

acquiring vocabulary for two reasons. First, children with LI have trouble learning words rapidly, which affects the rate at which they acquire vocabulary (Nash & Donaldson, 2005). Second, children with LI have trouble with reading comprehension and decoding words in literacy activities (Nation et al., 2004). So not only do children with LI have difficulties understanding what they are reading, they have trouble reading the words in literacy activities. Vocabulary is crucial for reading comprehension. In fact, Cunningham and Stanovich (1997) conducted a study showing that children's vocabulary size in first grade is a strong and unique predictor of their eleventh grade reading comprehension. Children with LI may have trouble reading (both decoding and comprehending) and therefore may learn new words less often during reading activities. Although vocabulary is an important aspect of a child's language acquisition, there is generally only limited knowledge of the most effective ways to teach vocabulary, including for children who are affected by LI (Neuman & Dwyer, 2009). Inadequately addressing the early vocabulary needs of children with LI sets them back in their education in significant ways.

Speech-language pathologists (SLPs) are responsible for addressing the language needs of children with LI through school-based therapy. Therapists tend to direct their attention in two different ways: focusing interaction on specific components of language (e.g., vocabulary, grammar) or focusing on language as a whole (e.g., at the discourse level; Munro et al., 2008). While there are two main therapy directions, there is no agreement on which is more effective. In this study, the focus was determining how much therapy time was spent on improving specific components of children's language skill, namely vocabulary. We might speculate that SLPs who provide therapy to children with LI that include a strong emphasis on vocabulary may promote not only children's vocabulary skills but also their long-term reading and academic success.

This study was motivated because there is little known about school-based speech therapy. Specifically, it is currently unclear how much time SLPs focus on vocabulary in speech-language therapy for children with LI. In a study done to mainstream speech therapy, it was proven that it is easier to address children's phonological impairments versus their language impairments (Wren et al. 2001). While vocabulary may be important, there is an ongoing argument as to the most effective strategy to use in order to teach these skills. Some SLPs may use repetition (i.e., drill) to teach vocabulary because it has been proven that children with LI can learn new vocabulary quickly with extra exposures to the word (Rice & Oetting, 1994). In a study done by Nash and Snowling (2005), it was determined that teaching children a context method to learn new vocabulary words was more effective than just teaching them the definition of a word. Another study showed that a curriculum-focused mainstream approach in the classroom was most effective when teaching children with LI (Parsons, et al. 2005). Other therapists may teach vocabulary through phonological cues and decoding. There is also a trend that as a child gets older the vocabulary skills taught to them are metacognitively based versus skills acquisition based (Law et al., 2008). This means that the therapist is encouraging the child to think about strategies to learn vocabulary versus teaching specific linguistic rules (Law et al., 2008). Nevertheless, SLPs do not have a consensus on the techniques or methods that are developmentally appropriate for vocabulary instruction (Neuman and Dwyer, 2009). If there were techniques and methods that are associated with greater vocabulary growth, SLPs could integrate these techniques into their therapy. An initial step in that direction involves learning about what techniques SLPs are using, which is the one of the goals of this study.

The Present Study

This research study focuses specifically on the time spent on vocabulary and the vocabulary techniques used in speech-language therapy sessions as delivered by SLPs to children with LI receiving therapy in public schools. This study examined how much time children spent on vocabulary development in each therapy session and the different methods and techniques used in those therapy sessions by their SLPs. Also, this study determined whether children's vocabulary scores were associated with the amount of time spent on vocabulary and the techniques used in therapy. It was theorized that SLPs would spend more time on vocabulary intervention for children who had lower vocabulary scores.

Methods

This study was conducted as a small, embedded research project within a larger study funded by the U.S. Department of Education's Institute of Education Sciences – Project STEPS (Speech Therapy Experiences in Primary Schools). Project STEPS is a four-year study involving an eventual 90 school-based SLPs and approximately 4 children with LI from each of their caseloads, for a total sample of size of about 360 children. Each child participating in Project STEPS has a diagnosis of LI and is receiving speech-language therapy at school as required by their IEP. Project STEPS activities involve conducting in-depth assessments of each child's language skills in fall and spring of the year, including measures of vocabulary, and collecting in-depth assessment of the therapy they receive. As part of this, each child's SLP videotaped five therapy sessions over the academic year and submits these for coding by STEPS personnel, using the Language Intervention Observation Scale (LIOS) (Justice & Schmitt, 2010). LIOS codes capture the time and techniques SLPs use to teach a range of language skills, including vocabulary.

Participants

Nine children, six males and three females, all of whom were receiving therapy services for speech-language impairment, served as participants for this study. Project STEPS staff contacted the children's parents and no research activities were conducted until after informed consent was provided. Each of the children's school SLPs also consented to participate in the study.

The nine children were students at public elementary schools and were enrolled in either kindergarten or first grade. The children had IEPs specifying delivery of treatment by school-based SLPs. The children ranged in age from 5 years 9 months old to 8 years old. In terms of ethnicity/race, the children were predominantly Caucasian (7 Caucasian, 1 Native American, and 1 unknown). Although the children were identified as requiring special education services for speech-language impairment, their vocabulary skills were in the typical range ($M = 94.2$) based on the Woodcock-Johnson Test of Achievement - III Picture Vocabulary subtest (*average score* = 100, $SD = 15$).

Procedures

For this study, one therapy session for each of the 9 children with LI was coded to examine content of the session with respect to the focus on vocabulary. Each child was videotaped by his or her SLP during a therapy session based on a schedule provided by Project STEPS staff. These videos were coded at a research lab using the Language Intervention Observation Scale (LIOS), which codes for five different behavior groups (see Table 1). Behavior groups are sets of codes summarizing a specific aspect of the therapy session, such as who is talking (e.g. talk time behavior group, which contains ten different codes).

All coders who used LIOS to code videos were trained comprehensively to reach a reliability standard established by the larger study. Each coder was given a manual with

supplemental power point presentations. The power points offered video clips as examples and further explanations on each code. Coders were responsible for learning the definition of each code and the critical differences between codes. After the coder had mastered a behavior group, their knowledge of the codes was tested by a quiz.

To become reliable, the coder completed up to nine practice videos that were then compared to master codes of the video. Any deviations from the master video were examined and clarifications were made if needed. After all practice videos were completed, the coder moved on to code reliability videos. Once the coder achieved reliability for at least three videos with a kappa agreement score of 0.75 with a minimum of 0.7 on each behavior group, he or she was considered a reliable coder. To ensure continued reliability among all coders, double or triple codes were completed periodically, such that each coder would code the video independently and then STEPS personnel would compare each coder's results. Again, any variations or clarifications for coders were made immediately. Coders also had frequent meetings with STEPs personnel to ensure that all codes were fully understood and used consistently.

Upon becoming reliable, the coder was free to choose videos from the first session. Each video was opened in Noldus software to be coded. All videos were watched on the computer and independently coded. To ensure maximum concentration while coding, headphones were provided. The coding room was also kept as a quiet environment to minimize distractions. On average, it took 5 to 7 hours to code each video. The coder followed a specific process to ensure all codes were identified. The coder first watched the video in its entirety to gain a general understanding of what the therapist was trying to focus on. On the second viewing, the coder coded for three specific behavior groups, namely talk time, materials, and interactions (see Table

1). On the third viewing, the coder coded for the remaining target and technique behavior groups. In implementing LIOS, coders first identified the target(s) addressed by the SLP within each session using time-stamped coding. Upon coding a target, the coder was prompted to select a technique used to address that target. Both target and technique were recorded at the same timestamp. After coding for all behaviors, the coder would often view the video a fourth time to ensure all behavior groups were coded and accounted for. Note that while vocabulary was the focus of this study, the coder coded for 14 different targets within the target behavior group.

For the present study, codes related to vocabulary (i.e., percent of time spent addressing vocabulary targets and techniques used) were extracted from LIOS-coded videos in Noldus software and exported into SPSS. These results were analyzed descriptively to identify how much time SLPs address vocabulary in therapy and the primary methods they use. Also, correlational analyses were used to examine relations between the LIOS codes and children's vocabulary scores based on the Woodcock-Johnson Test of Achievement - III Picture Vocabulary subtest.

Measures

The primary measures used in this study were measures of vocabulary within children's therapy sessions and a standardized measure of vocabulary given to each child. First, for the measures of vocabulary within children's therapy sessions, these were coded from children's speech-therapy video sessions using the LIOS coding system. The measure extracted from LIOS was the amount of time vocabulary was addressed within a session as the therapeutic target. Subsequent to identifying a specific target (e.g., vocabulary, narrative), coders then identified the exact technique used to address that target. In total, 13 different therapeutic techniques could be coded, as shown in Table 2. As with coding of targets, these techniques were

coded in terms of total duration of time spent using the technique(s) within a given therapy session.

With respect to the standardized measure of vocabulary given to each child, children were administrated the Picture Vocabulary subtest in the Woodcock-Johnson Test of Achievement - III. The Woodcock-Johnson Test of Achievement - III includes 22 oral language and achievement tests. Scores from this test can measure performance levels, determine educational progress, and identify strengths and weaknesses.

Results

The first research question addressed in the study was concerned with determining how much time vocabulary is targeted within children's speech-language therapy sessions. This research question was addressed descriptively using data provided by the nine children in this study. The first research question determined specifically how the average duration of therapy sessions and the average amount of time spent across the sessions on vocabulary. The average duration of sessions was 23.3 minutes (*SD* = 2.9 minutes, *range* = 18.2 - 28.7 minutes). On average, 23.5% of the children's therapy sessions were focused on vocabulary (*SD* = 22%, *range* = 0.76 - 52.5%). The average total amount of time spent on vocabulary per session was 5.7 minutes (*SD* = 5.7 minutes, *range* = 10 - 889 seconds). This means that, on average about one-fourth of children's therapy time is spent on vocabulary for this target population.

The second question addressed in the study concerned identifying what methods or techniques are used in sessions to address vocabulary. Again descriptive statistics were used to address this question. First, the number of treatment sessions that included each of the 13 techniques was identified. Table 3 provides an examination of the percentage of sessions in which each of the 13 techniques studied occurred. As can be seen in Table 3, one can note that

some techniques were used in every session, such as visual cues and leading questions, whereas choices and tactile cues only occurred in two sessions. Finally, the technique, think aloud, occurred in none of the nine sessions. Therefore, the predominant techniques being used in children's therapy sessions for teaching vocabulary are leading questions and visual cues, while the least occurring technique is think aloud.

This study also examined the average rate of use for all techniques, as shown in Table 3. It shows not just the percentage, but also the average number of times the technique was used in the session. This is helpful to show how often each technique is used per session. The results in Table 4 show the frequency each technique was used in each session. This information highlights which sessions were focused on vocabulary and which sessions were not. Each of the 9 sessions has instances of vocabulary throughout the session. However, sessions 4, 6, 7, and 8 were heavily focused on the vocabulary target using anywhere from 9-11 techniques, while session 3 only used 4 techniques.

Table 5 shows the overall total frequency of each technique in all 9 sessions. This data provides a concrete number of occurrences of the 14 techniques across all sessions. Table 6 shows the number of techniques (out of a possible 14) that each therapist used in the sessions. The therapist in Session 3 only used 4 techniques while the therapist in Session 4 used 11 techniques. This data shows the varying strategies toward therapy depending on the therapist. On average, 7.9 techniques are used per video.

The third question addressed in this research study concerned whether the amount of time spent on vocabulary and/or use of techniques were related to children's vocabulary skills of children with LI. It was theorized that more time would be spent on vocabulary targets for those children with lower vocabulary skills. To examine the relationship between the percent of time

spent on vocabulary and children's vocabulary standard scores, correlational analysis was conducted for those two variables. Results showed that these two variables were not related, $r = -0.035$, $p = 0.929$. This study also examined the relationship between the number of techniques used within sessions and children's vocabulary standard scores. Results also showed that the two variables were not related, $r = 0.006$, $p = 0.989$.

Discussion

To summarize the results of this study, the first major finding concerned the average amount of time children spend working on vocabulary in therapy sessions. On average, about one-fourth of children's therapy sessions are focused on vocabulary. The second major finding was determining which techniques were most commonly used when SLPs work on vocabulary with children in therapy sessions. Out of the 14 techniques, 13 were used at some point during the nine videos, and the two most prominent techniques used were visual cues and leading question. Both visual cues and leading questions were used in all nine videos. One cue, think aloud, was not used once during the nine videos, while choices and tactile cues only occurred 22.2% of the time. The third major finding examined whether the amount of time spent on vocabulary and the techniques used to teach vocabulary were related to children's scores on the Picture Vocabulary subtest of the Woodcock-Johnson Test of Achievement - III. Results showed no systematic relationship between vocabulary focus in therapy and children's vocabulary skills. This means that low vocabulary scores are not a predictor of the amount of time a therapist spends on vocabulary or the techniques/methods they will use.

The present study is an important one, as LI is one of the most prevalent developmental disorders among children five to seven years old. LI affects the social, behavioral, and educational needs of the child. Because of its vast impact on children and therefore the

community at large, research on how to improve the child's language is crucial to understanding more about LI. This study was done to determine the degree SLPs focus on vocabulary when providing treatment to children with LI, as increasing the vocabulary skills of children with LI may help to improve their communication as well as their overall reading achievement.

The first finding determined the average amount of time spent on vocabulary in each therapy session. This is an interesting discovery as no prior study has discussed how much time a therapist will spend working on vocabulary with children with LI. This study produces findings that show the average time on vocabulary per session is about 5.67 minutes. It also showed the average duration of an entire therapy session was around 23.25 minutes. Overall, study results show that at least one-fourth of every therapy session is focused on vocabulary for children with LI. This can help therapists to plan their therapy sessions based on the assumption that if they are working with a child with LI, they should plan to spend about a quarter of that session on vocabulary. An important future research goal will be determining if this is an optimal amount of time for addressing vocabulary, or whether more time needs to be dedicated to this important area of development.

There are varying techniques for how SLPs might address vocabulary as well as other therapy targets when working with children with LI. In this study, 14 possible techniques for working on children's vocabulary skills were coded. Results showed that two codes used in every therapy session were leading questions and visual cues, while language modeling and cloze procedure were used in 8 out of 9 videos. It is interesting to know that SLPs use a variety of techniques to address vocabulary, but that some techniques, such as visual cues, consistently dominate across therapy sessions. This study shows the most and least commonly used techniques.

The most surprising finding in this study was finding that children's vocabulary scores on a standardized measure of vocabulary are not predictors of the amount of time that a therapist spends on vocabulary. It was hypothesized that those children with the lowest vocabulary scores would have the most time allocated to vocabulary targets in their sessions. However, this was proven not to be the case. This information is helpful because it shows that while a child with LI may have a low vocabulary score, it does not mean the entire therapy session is focused solely on vocabulary. LI affects many other aspects of a child's communication. Therapy sessions must be based on the needs of the child. While a child may have a low vocabulary score, they may have greater weaknesses in other areas that are more important for the therapist to address.

Limitations

There were some limitations to this study. First, this study only examined nine therapy sessions and nine children. Investigation of more therapy sessions and more children would provide more concrete data. Second, there were also limitations provided by the Woodcock-Johnson Test of Achievement – III (Picture Vocabulary Subtest). The average vocabulary score for the nine children on this measure was 94.2 (SD=4.32, range=89-101). A 94.2 is in the average range for this measure, therefore it is possible that therapists did not see the need to work on vocabulary. Replicating this study with children who have clear vocabulary weaknesses would be informative.

Implications

This is the first study that has opened up the largely unknown world of children with LI receiving therapy from SLPs in the school system. Roughly 71,944 SLPs work in an educational facility, which represents 57% of the SLP profession. On average, each SLP has 200 children on their caseload that they work with twice a week (Highley & Kaur 2006). The mass amount of

therapy provided in the schools is largely a mystery with no standardization on therapy. Speech language pathologists plan therapy sessions that can focus on a variety of targets including articulation, grammar, literacy, abstract language, vocabulary, and more. This study focuses solely on vocabulary, which is only one small dimension of therapy sessions.

Before this study, there was no data on the duration of time spent on vocabulary or the techniques used. However, this study can only serve as a baseline for future research. Now that is understood how much time is spent on vocabulary, further research needs to be done to determine if one fourth of a therapy session is an appropriate amount of time to be spending on vocabulary. Vocabulary is the most important goal for children with LI, but there is no knowledge on the techniques therapists use in therapy sessions. Speech language pathology is a craft based discipline, which means more research needs to be done to determine how therapists are providing services. This research shows that therapists are using on average 7.9 different techniques per session to teach vocabulary. However, we do not yet know if using such a vast variety of techniques is helpful to the child or if it would be more beneficial to use fewer techniques. This study provides a baseline of research on speech therapy in schools, but also generates numerous questions for future research.

Future Directions

The limitations combined with the findings of this study show promising directions for future research. As mentioned previously, this same study could test children who have below or severely below average vocabulary test scores. It could be predicted that children who have severely low vocabulary scores would spend more time on vocabulary in each therapy session. Another approach to this study would be to examine the children's end of year test scores on the Woodcock-Johnson Test of Achievement – III Picture Vocabulary subtest. Average vocabulary

scores did not predict that more time would be spent on vocabulary. However, by comparing the beginning year scores to the end of year scores, it might be possible to show that vocabulary skills increased in relation to time spent on vocabulary during therapy.

In summary, this study lays the groundwork for further research on children with LI and how SLPs address their vocabulary needs in therapy. Expanding on results found in this study has the potential to standardize therapy for children with LI and to understand how SLPs differentiate treatment to meet children's specific needs. Determining the predictor of time spent on vocabulary and the techniques most effective to teach vocabulary will make planning therapy easier for therapists while making strides toward vocabulary gains for children with LI.

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Table 1: 5 Behavior Groups Coded For In LIOS

Talk Time Behavior Group	Captures who is talking at any given point during a therapy session. This Behavior Group does not capture what is said or the quality if what is said, but simply who is doing the talking. Talk Time includes 9 specific behaviors.
Materials Behavior Group	Captures the tools and resources used during the therapy session. Materials does not describe how the specific tools are being used or the effectiveness of the tools, but what is used for how long during the therapy session. Materials include 21 specific behaviors.
Interaction Behavior Group	Captures two elements: who is actively participating in the therapy session and who is directing the interaction. Interactions may involve verbal or nonverbal participation. Interaction includes 6 specific behaviors.
Target Behavior Group	Captures the specific speech, language, and communication skills the therapist is addressing during the therapy session. Target includes 14 specific Behaviors.
Technique Behavior Group	Captures the strategies used by the therapist during therapy. Technique includes 13 specific behaviors.

Table 2: 13 Techniques Used To Target Vocabulary In The Therapy Session

Technique	Definition
Directing Attention	Signals the child to attend in a specific direction to be able to receive another technique.
Language Modeling	Appropriate speech and language forms used in specific ways by the therapist as a model for the child.
Wait Time	A period of silence, ranging in length of time, between prompt and child response.
Choices	Options (incorrect or correct) given to the child to restrict possible answers.
Leading Question	Used to prompt thought and response toward child's target.
Leading Statement	Used to prompt responses either expressive or receptive from the child.
Cloze Procedure	Fill-in-the-blank sentences that are started by the clinician.
Phonemic Cues	First phoneme of the word is produced by the clinician to trigger recall of a word.
Imitation	Any speech produced by the therapist that is then repeated by the child.
Visual Cues	Any visual information used to elicit a correct response from the child.
Tactile Cues	Sensory information used to cue targets.
Reinforcement	Encouragement for the child to use accurate targeted forms of speech more frequently.
Think Aloud	A model for the child of how to think through appropriate speech and language forms.

Table 3: Percentage Of Sessions In Which Each Of The 13 Techniques Occurred

Technique	% of Sessions in Which Technique Occurred	Average Number of Times Techniques Used Per Session
Directing Attention	33.33%	1.33
Language Modeling	88.89%	27.13
Wait Time	66.67%	6.17
Choices	22.22%	4
Leading Question	100.00%	33.56
Leading Statement	66.67%	9.33
Cloze Procedure	88.89%	13.88
Phonemic Cues	44.44%	2.75
Imitation	66.67%	4.5
Visual Cues	100.00%	41.78
Tactile Cues	22.22%	2
Reinforcement	88.89%	16.13
Think Aloud	0.00%	0

Table 4: Frequency Of Each Technique In The 9 Therapy Sessions

	Session 1	Session 2	Session 3	Session 4	Session 5	Session 6	Session 7	Session 8	Session 9
Directing Attention	0	2	0	1	0	0	0	1	0
Language Modeling	12	7	0	48	4	46	54	42	4
Wait Time	5	1	0	3	0	18	4	6	0
Choices	0	0	0	6	0	2	0	0	0
Leading Question	26	9	1	53	3	54	68	82	6
Leading Statement	10	1	0	9	0	13	4	19	0
Cloze Procedure	1	0	1	5	3	30	24	44	3
Phonemic Cues	1	0	0	0	0	0	5	4	1
Imitation	1	2	0	1	0	9	3	11	0
Visual Cues	4	8	2	65	7	104	106	76	4
Tactile Cues	0	0	0	2	0	0	0	0	2
Reinforcement	3	2	1	4	1	51	35	32	0
Think Aloud	0	0	0	0	0	0	0	0	0

Table 5: Total Times Each Technique Was Used In All 9 Therapy Sessions

Technique	Total Times Used Across 9 Sessions
Directing Attention	4
Language Modeling	217
Wait Time	37
Choices	8
Leading Question	302
Leading Statement	56
Cloze Procedure	111
Phonemic Cues	11
Imitation	27
Visual Cues	376
Tactile Cues	4
Reinforcement	129
Think Aloud	0

Table 6: Number Of Possible Techniques Each Session Used

Session	# of Different Techniques Used
1	9
2	8
3	4
4	11
5	5
6	9
7	9
8	10
9	6